SECTION 15195

NATURAL GAS PIPING SYSTEMS

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Edit to suit project requirements. Coordinate this Specification with Civil Standard Drawing ST3211, and Mechanical Standard Drawings ST6500 and ST6510.

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PART I GENERAL

1.1 SECTION INCLUDES

A. Interior gas piping systems

B. Exterior gas piping systems

1.2 LANL FURNISHED AND INSTALLED EQUIPMENT

A. LANL's support services subcontractor (SSS) will furnish and install the gas regulator station (piping, fittings, regulator) as noted on the Drawings.

1.3 LANL PERFORMED WORK

A. LANL's SSS will tie into existing gas piping system.

1.4 SUBMITTALS

A. Submit the following in accordance with the requirements of Section 01300:

1. Catalog data on pipe materials, pipe fittings, valves, pipe coating, and accessories.

2. Certification of welders and qualified welding procedure.

1.5 QUALITY ASSURANCE

A. Welders Certification and Qualified Procedure

1. Exterior Steel Pipe: API Standard 1104

2. Interior Steel Pipe: Section IX of ASME Boiler and Pressure Vessel Code.

3. Plastic Pipe: 49 CFR 192.283 and 192.285, and the Driscopipe heat fusion qualification guide.

PART 2 PRODUCTS

2.1 POLYETHYLENE PIPING, BELOW GRADE

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Do not use polyethylene piping when the design pressure exceeds a gauge pressure of 100 psig (49 CFR 192.123).

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A. Manufacturer: Phillips Driscopipe 8100, no substitution.

B. Pipe: Polyethylene, high density, ASTM D2513, PE3408, SDR11 iron pipe size, cell classification number 345544C per ASTM D3350.

C. Fittings: Polyethylene, high density, butt heat fusion type, ASTM D3261, PE3408, SDR 11, cell classification number 345544C per ASTM D3350.

2.2 STEEL PIPING, BELOW GRADE

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Contact FE-8 Gas Engineer for approval to use steel piping below grade.
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A. Pipe: Standard wall, black steel, ASTM A53 or API 5L.

B. Fittings: Standard wall, black steel, butt welding type, ASTM A 234, Grade WPB.

C. Coating: Factory applied thermoplastic resin, minimum 10 mil adhesive coating, minimum 60 mil plastic coating, per Federal Specification L-C-530C, or an approved equal by the FE-8 Gas Engineer.

2.3 STEEL PIPING, ABOVE GRADE

A. Pipe: Standard wall, black steel, ASTM A53. Welded for pipe sizes above 2 inches, threaded for pipe sizes 2 inches or less.

B. Fittings: Malleable iron, threaded type, ANSI B16.3, Class 150 or standard wall, black steel, butt welding type, ASTM A234, Grade WPB.

C. Flanges: Steel, weld neck, class 150, raised face, ANSI B16.5.

D. Gasket Material: Neoprene, durometer hardness 50-65.

2.4 PRESSURE REGULATOR STATION

A. LANL's support services subcontractor will furnish, install, and set pressure regulator(s) as noted on Drawings.

2.5 GAS SHUT-OFF VALVE, ABOVE GRADE, THREADED ENDS

A. Manufacturer: Nordstrum, Fig. 142, no substitution.

B. Valve: Iron body, threaded ends, lubricated plug, wrench operated, 200 psig working pressure, size [1/2], [3/4], [1], [1 1/2], [2] inch(es).

2.6 GAS SHUT-OFF VALVE, ABOVE GRADE, WELDED ENDS

A. Manufacturer: Nordstrum, Fig. 1943-1/2, no substitution.

B. Valve: Steel body, butt welded ends, lubricated plug, wrench operated, 200 psig working pressure, size [2], [3], [4] inches.

2.7 GAS SHUT-OFF VALVE, ABOVE GRADE, FLANGED ENDS

A. Manufacturer: Nordstrum, Fig. 1925, no substitution.

B. Valve: Steel body, flanged ends, lubricated plug, wrench operated, Class 150, size [2], [2-1/2], [3], [4] inches.

2.8 GAS SHUT-OFF VALVE, BELOW GRADE, POLYETHYLENE

A. Manufacturer: Nordstrum, No. 83111 [2 inches], No. 83211 [3 inches], [4 inches], no substitution.

B. Ball Valve: Polyethylene, PE 3408, SDR11, Driscopipe 8000, ends suitable for butt fusion, wrench operated, 100 psig working pressure, size [2], [3], [4] inches.

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or

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A. Manufacturer: Nordstrum, No. 83111 [3/4 inch], No. 83211 [1 inch], No. 83211 [1-1/4 inches], no substitution.

B. Plug Valve: Polyethylene, PE 3408, SDR11, Driscopipe 8000, ends suitable for butt fusion, wrench operated, 100 psig working pressure, size [3/4], [1], [1- 1/4] inch(es).

2.9 GAS SHUT-OFF VALVE, BELOW GRADE, STEEL

A. Manufacturer: Nordstrum, No. 1942 - 1/2, no substitution.

B. Plug Valve: Steel body, socket welded ends, lubricated plug, wrench operated, 200 psig working pressure, size [1], [1-1/4] inch(es).

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or

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A. Manufacturer: Nordstrom, No. 1943 - 1/2, no substitution.

B. Plug Valve: Steel body, butt welded ends, lubricated plug, wrench operated, 200 psig working pressure, size [2], [3], or [4] inches.

2.10 ANODELESS RISER

A. Prebent, for use with Driscopipe 8000 polyethylene piping, PE 3408, SDR11 iron pipe size, ends to suit piping system.

2.11 VALVE BOX

A. Manufacturer: Tyler, Series 6860

B. Valve Box: Cast iron, 5 1/4 inch shaft screw type, with lid marked “gas”, length to suit burial depth.

2.12 TEST PLUG (PETE’s PLUG)

A. 1/4 inch NPT, brass body, neoprene core, rated for 1,000 psig, complete with sealing cap and gasket, to receive 1/8 inch O.D. probe.

PART 3 EXECUTION

3.1 GENERAL INSTALLATION

A. Furnish and install piping as indicated on the Drawings and in accordance with the latest edition of the Uniform Building Code, the Uniform Mechanical Code, ASME Power Piping Code B31.1, and the Code of Federal Regulations, 49 CFR 192, for gas pipe line system.

3.2 POLYETHYLENE PIPING INSTALLATION

A. Lay piping on ditch bottom in such a manner as to snake the piping from one side of the ditch to the other with one cycle approximately every 40 feet. This will insure that sufficient

piping material is available for temperature contraction.

B. Install with sufficient clearance, or insulate from any source of heat, as to prevent heat from impairing serviceability of pipe. Do not install near underground steam and condensate lines.

C. Perform butt heat-fusion joining in accordance with ASTM D2657 and the manufacturer's recommendations. See PART 1, Quality Assurance.

D. Install sandbedding, warning tape, and tracer wire as noted on Drawings.

E. Make plastic to steel connection with a transition fitting that is butt fused on the plastic end and welded on the steel end.

3.3 STEEL PIPING INSTALLATION

A. Butt weld underground steel piping. See PART 1, Quality Assurance.

B. Use threaded joints for above grade piping 2 inches and smaller and butt welded joints for piping above 2 inches.

C. Apply Polyken primer 1029 to underground joints, fittings, and valves, and spiral wrap with a double layer, half lapped, 35 mil tape, Polyken 930. Follow manufacturer's instructions.

D. Install sandbedding and warning tape as noted on Drawings.

3.4 TIE-IN

A. Tie-in to existing system shall be coordinated with and performed by LANL's support services subcontractor. The Contractor shall provide materials required for tie-in and trench as noted on the Drawings. Tie-in will be inspected by the Facilities Division Utilities Group representative.

3.5 CLEARANCE

A. Horizontal separation between any underground utility service shall be a minimum of 3 feet.

B. Vertical separation between any underground utility service shall be a minimum of 2 feet.

3.6 TESTING

A. Refer to Section 15992, Testing of Piping System

3.7 PIPING IDENTIFICATION AND WARNING TAPE

A. Refer to Section 15190, Mechanical Identification

3.8 PAINTING

A. Paint outside gas regulator piping, valves, and appurtances above ground to match building exterior.

B. Refer to Specification 09900, Painting.

3.9 PIPING SUPPORTS

Refer to Section [15140], Support and Anchors

3.10 GAS LINE COVER

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Refer to Civil Standard Drawing ST3211, Utility Trench.
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A. Provide cover and bedding per trench detail noted on Drawings.

3.11 CORROSION CONTROL (STEEL PIPING BELOW GRADE)

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Contact Robert Keown, JCNNM Utilities at 7-6191, or Jerry Gonzales, at 5-2612 for cathodic protection requirements.
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END OF SECTION